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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/053,555	01/24/2002	Tadao Ookawa	Q68175	3320

7590 02/13/2004

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EXAMINER

DINH, TUAN T

ART UNIT PAPER NUMBER

2827

DATE MAILED: 02/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/053,555

Applicant(s)

OOKAWA ET AL.

Examiner

Tuan T Dinh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 9-13 is/are rejected.
- 7) ☒ Claim(s) 5, 6, 14 and 15 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 10 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 10, lines 2-5, it is confuse. The phrase of "the metal layer...substantially equal" is not understood. Applicant recites in claim 9 that "a characteristic impedance of ...within +/- 10 of a characteristic impedance of said control circuit board" which is understood by examiner that the different of impedance between the flexible circuit board and the suspension board, which are +/- 10 tolerances/different of impedance. How they could be substantially equal? For example, the characteristic impedance of the junction flexible wiring board is 100 Ohms, then the characteristic impedance of the suspension and control boards, which are 90 or 110 Ohms

Regarding claim 13, line 2, it is confuse. How a (one) metal layer (the metal layer recite in claim 1 as a front surface layer, and form on at least one side (that can be **only one side**, see claim 7) can be formed on both sides of the flexible circuit board recited in claim 13?

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 7, 9-10, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prior Art (figure 12, submitted by applicant, hereafter PA) in view of Kuramochi et al. (U. S. Patent 6,252,176).

As to claims 1-3, 7, and 13, PA discloses a junction flexible wiring circuit board (4) as shown in figure 12 used for performing junction between suspension board (2) for mounting a magnetic head (1) thereon and a control circuit board (3) for operating the magnetic head comprising terminal portions (14, 15) connected to the suspension board. The flexible wiring circuit board (4) further comprising a plurality of wiring circuit patterns (12) and a width of each of said patterns (12) is not projected out.

The flexible wiring circuit board (4) does not disclose a metal layer formed on a front surface and substantially uniformly in the lengthwise direction except portions where the terminal portions are provide.

Kuramochi shows a flexible wiring circuit board (7, column 3, lines 15-16-see figures 1A-1C) comprising: a metal layer (3, column 2, line 66) formed on a front surface (of an Insulating base layer 6) and substantially uniformly in the lengthwise direction except portions where terminal portions (4) are provided (see figure 1).

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to have teaching's Kuramochi to employ the flexible wiring circuit board of PA in order to provide an achieve characteristic of impedance value of electrical connections between the flexible circuit board, the suspension board, and the control board.

As to claim 4, Kuramochi discloses the flexible wiring board (7) as shown in figure 1 wherein

a width of said metal layer is formed to be not smaller than a sum of a total width of said wiring circuit patterns and a total width of intervals between said wiring circuit patterns; and

a width of each of said wiring circuit patterns is not projected out from the width of said metal layer.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have teaching's Kuramochi in claim 4 to employ the flexible wiring circuit board of PA in order to provide a sufficient cover and protect for the flexible circuit board.

As to claims 9, and as best understood to claim 10, PA discloses the flexible wiring board (4) in figure 12 provide in combination with a suspension board (2) and a control board (3).

PA does not disclose a metal layer formed on a front surface of the flexible circuit board.

Kuramochi shows a flexible wiring circuit board (7, column 3, lines 15-16-see figures 1A-1C) comprising: a metal layer (3, column 2, line 66) formed on a front surface of the flexible wiring circuit board (7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a metal layer formed on a surface of the flexible circuit board as taught by Kuramochi to employ the flexible wiring circuit board of PA in order to provide an achieve characteristic of impedance value of electrical connections between the flexible circuit board, the suspension board, and the control board.

PA and Kuramochi do not show characteristic impedances between the flexible circuit board, the suspension board, and the control board within +/-10 in tolerances/difference.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have characteristic between the flexible board, and the suspension and control boards as taught by PA and Kuramochi for purpose of increasing the thickness of the multiplayer flexible circuit board that means increasing/decreasing the impedance values of the flexible circuit board.

5. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over PA (figure 12) in view of Kuramochi ('176), and further in view of Kishimoto et al. (U. S. Patent 6,524,892).

PA and Kuramochi do teach all of the limitations of the claimed invention as explained above, except for the metal layer having thickness in a range from 500

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angstroms to 30 microns. Kishimoto teaches a flexible circuit board (10) having a metal layer (20), the metal layer has a thickness in a range from 500 angstroms to 30 microns (see column 5, lines 49-55).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have teaching's Kishimoto to employ the flexible wiring circuit board of PA and Kuramochi in order to improve the impedance and flexure of the flexible circuit board.

Allowable Subject Matter

6. Claims 5-6, and 14-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Applicant's arguments filed 10/30/03 have been fully considered but they are not persuasive.

Applicant argues to withdrawn the rejection of section 112, second paragraph, in page 7 of the amendment filed on 10/30/03.

Examiner disagrees. The rejection of section 112, second paragraph is still moot and proper as explained in page 2 of the office action. For example, claim 10 recites "...the characteristic impedance...substantially equal" how can they be equal?

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when the characteristic impedance of the flexible wiring board of $\pm 10\%$ impedance of the suspension and control boards.

With respect to claim 13, examiner is explained in page 2 of the office action that "a metal layer formed as a front surface layer" claim 1, and at least one side of the flexible wiring board, claim 7, which is one side of the flexible wiring board. So that, the limitation of claim 13 that "said metal layer is formed on both sides of the flexible wiring board" is so confusing and contradiction.

Applicant argues that Kuramochi does not provide or motivation of a metal layer to the board of the PA, and the combination of the references fails to teach or suggest the capability of achieving a characteristic impedance of the junction flexible wiring board to be within $\pm 10\%$ of the suspension and control bards.

Examiner disagrees. With respect to claim 1, applicant recites in the preamble that "a junction flexible wiring board **used for...for** operating said magnetic head" and does not support to the body of the claimed invention. Also, the "for function" is an intended used and not a positive claim. Kuramochi shows a flexible wiring board (7) clearly shown in figures 1A-1C that a metal layer formed as a front surface layer substantially uniformly in the lengthwise direction on the board (7), and also the metal layer does not form on terminal portions (4) provided on the board. With respect to claim 9, Kuramochi provides the metal layer form on the surface of the flexible wiring board that increases the thickness of the flexible wiring board, the increasing thickness of the board means to increase or decrease the impedance value of the board, by in order to combine the Kuramochi to the PA, it would have been having ordinary skill in

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the art to employ the increasing thickness of the board that causes the change values of impedance of the board.

Conclusion

8. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T Dinh whose telephone number is 703-306-5856. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kammie Cuneo can be reached on 703-308-1233. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.


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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0658.

Tuan Dinh
January 23, 2004.


CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
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